Snapshots of Science & Medicine
Activity 3, Teacher's Edition

Animals, Viruses, Rights, and Wrongs
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Objective
Students will clarify and reinforce concepts of immune-system function and organ transplantation through role-playing hypothetical situations involving xenotransplantation.

Materials
Scenarios handout for each student.

Preparation
Students should read the "Research in the News" and "Social Impact" articles in the Xenotransplantation issue *of Snapshots in Science & Medicine.*

Procedure
This activity challenges students to articulate different viewpoints on issues concerning the ethics of xenotransplantation. After each student has a copy of the scenarios handout below, the activity can be run in several different ways:

1. Ask each student to speak as one of the characters extemporaneously for one minute.

2. Instruct students to write a script and read it before the class.

3. Allow two or three students to prepare collaboratively, then act out a conversation as the characters in the scenario for 2 to 4 minutes.

4. After reading the scenario aloud, ask the class as a whole to continue the story or conversation, with each student providing one sentence. Assign one student to record each person's contribution. Once the entire class has contributed, read back the entire piece, and ask students to discuss it.

5. Have students prepare a written responses to one or more of the scenarios.

Give students ample time to prepare their thoughts before speaking or writing. In all cases students should use the starter sentences to begin their presentation.

Assessment Here is an assessment rubric you may find useful.

Criteria (1 point each)

_____Use of vocabulary (1 point for each word, anything over 5 points is bonus)

_____Staying in "character"

_____Speaking for 1 full minute

_____Continuous speaking (no long breaks)

_____Speaking clearly

_____Using concepts from class

_____Bonus point for not pre-writing

_____Total Points Earned

Suggested List of vocabulary

- rejection
- acute rejection
- xenotransplant
- allotransplant
- antibody
- cyclosporine
- anti-rejection drugs
- immunosupression
- pathogen
- virus
- DNA
- zoonosis
- animal species
- chimeric immune system
- genes/genetic

Snapshots of Science & Medicine
Xenotransplants, Activity 3
Student Handout

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Here are several scenarios to start your discussions.

1. Two researchers are discussing whether to use chimpanzees or genetically engineered pigs as the source for organs for transplantation. Their experiments involve using the livers of these animals temporarily in humans as they wait for suitable human liver transplants. Researcher 1 wants to use chimpanzee livers. Researcher 2 wants to use livers from genetically engineered pigs.

Starter Sentences:
Researcher 1: The chimpanzee liver should reduce the risk of acute rejection because chimpanzees are more like humans.
Researcher 2: If the pigs have been genetically engineered so they no longer express some foreign antigens, the risk of rejection is nearly the same as with a chimpanzee.

2. Three friends are discussing the possibility of using animals that are bred specifically as sources of organs for human transplants. Student 1 is a strong animal-rights advocate. Student 2 received a transplanted liver from an accident victim; he almost died while waiting for a donor organ. Student 3 thinks using pigs is acceptable but doesn't accept the use of chimpanzees or baboons.

Starter Sentences:
Student 1: You can't just ignore the fact that this treatment kills the donor animal.
Student 2: If I have to choose between an animal's life and my life, I'm going to choose me.
Student 3: I don't mind sacrificing pigs—I had a ham sandwich for lunch—but chimpanzees are too much like humans to sacrifice for their organs.

3. A transplant surgeon talking to a very sick heart-transplant patient proposes using a pig's heart temporarily in the patient while they wait for a donor-heart match. The patient's own heart is very weak and will probably fail before a suitable human donor can be found.

Starter Sentences:
Surgeon: This is an extremely risky procedure, but unless we do something very soon, you will likely die.
Patient: I can accept risks to myself, but I'm not comfortable with the thought that I might pass on some unknown animal virus and hurt other people.

4. A doctor is discussing an experimental treatment with her late-stage AIDS patient. The treatment involves replacing part of the patient's bone marrow with a baboon's bone marrow, in an attempt to give her a functioning immune system that's resistant to HIV (the virus that causes AIDS).

Starter Sentences:
Doctor: It's important that you understand the risks and potential benefits involved in this procedure.
Patient: I understand all that, but I'm not sure I can live knowing I'm part baboon.